

Appl. No. 10/712,436  
Amdt. dated November 17, 2004  
Reply to Office action of October 19, 2004

Docket No. 58298-011501

### AMENDMENTS TO THE CLAIMS

**Claim 1.** (withdrawn) A marking template for assisting drilling holes into a femur of a patient, comprising:

- a top surface;
- a bottom surface;
- the bottom surface substantially formed to match a distal end of a femur; and
- an opening through the top and bottom surfaces adapted to guide a drill at a predetermined location along the distal end of the femur.

**Claim 2.** (withdrawn) A system for installing a replacement device to a distal end of a femur having a trochlear groove surface, comprising: a marking template, wherein:

- the marking template has a back side substantially matching the distal end of a femur;
- and

- a hole through the marking template;
- a drilling apparatus to form an opening on the distal end of the femur 5-assisted by the hole in the marking template; and

- a replacement device, wherein:
  - the replacement device has a bottom side substantially matching the distal end of the femur; and

- a pin protruding from the bottom side of the replacement device 10 adapted to insert into the opening on the distal end of the femur.

**Claim 3.** (withdrawn) A system according to Claim 2, wherein the replacement device has a top side substantially tracking a trochlear groove of the femur.

**Claim 4.** (withdrawn) A system according to Claim 2, further including a cement between the replacement device and the femur to bond the replacement device to the distal end of the femur.

**Claim 5.** (withdrawn) A system according to Claim 2, further including a bone ingrowth surface between the replacement device and the femur to bond the replacement device to the distal end of the femur.

Appl. No. 10/712,436

Docket No. 58298-011501

Amdt. dated November 17, 2004

Reply to Office action of October 19, 2004

**Claim 6. (original)** A method of making a replacement device, comprising the steps of:

- forming a model of a distal end of a patient's femur;
- forming a first mold from the model, wherein the first mold has a bottom side that substantially matches the trochlear groove of the patient's femur, wherein the first mold has a top side opposite of the bottom side;
- coupling a peg on a predetermined location on the bottom side of the first mold;
- shaping the top side of the mold to substantially track the trochlear groove of the patient's femur;
- forming a second mold from the first mold; and
- pouring viscous material into the second mold to make a replacement device.

**Claim 7. (original)** A method according to Claim 6, further comprising the steps of:

- streamlining the edges of the replacement device.

**Claim 8. (original)** A method according to Claim 6, further comprising the steps of:

- shaping the replacement device to have an oval shape defined by first, second, third, and fourth boundary conditions, wherein:
  - the first boundary condition being approximately 3 mm to 5 mm from the attachment of an anterior cruciate ligament to the femur;
  - the second boundary condition being approximately at least near the superior edge of an end of a natural cartilage of the femur;
  - the third boundary condition being approximately at the top ridge of a right condyle of the femur; and
  - the fourth boundary condition being approximately at the top ridge of a left condyle of the femur.

**Claim 9. (original)** A method according to Claim 6, further comprising the steps of:

- shaping the top surface of the replacement device to have a substantially similar thickness between the top and bottom surfaces, wherein the thickness is approximately between 2 mm and 6 mm.

**Claim 10. (original)** A method according to Claim 6, further including the steps of:

Appl. No. 10/712,436

Docket No. 58298-011501

Amdt. dated November 17, 2004

Reply to Office action of October 19, 2004

taking a predetermined number of sliced images along the distal end of a patient's femur;  
transposing each of the predetermined number of sliced images into a plate;  
cutting the sliced images from each of the plates;  
assembling each of the plates to define outer edges of the distal end of the femur; and  
applying filler over the outer edges to form the model of the distal end of the femur.

**Claim 11. (currently amended)** A method of forming a replacement device and a marking template device from a single mold, comprising the steps of:

forming a model of patient's distal end of a femur;  
forming a first mold from the model, wherein the first mold has a back ~~10~~-side that matches the trochlear groove of the femur, wherein the first mold has a face side opposite of the back side;  
shaping the face side of the first mold to substantially track the trochlear groove of the femur;  
forming a second mold from the first mold; and  
pouring a first viscous material into the second mold to make a replacement device.

**Claim 12. (original)** A method according to Claim 11, further including the steps of:  
coupling a peg to the back side of the first mold at a predetermined ~~20~~ location;  
removing the peg from the back side of the first mold;  
forming a third mold from the first mold without the peg on the back side; and  
pouring a second viscous material into the third mold to make a marking ~~25~~ template.

**Claim 13. (original)** A method according to Claim 11, further including the steps of:  
forming an opening through the first mold along the predetermined location.

**Claim 14. (original)** A method according to Claim 11, wherein the first viscous material and second viscous material is the same material.

**Claim 15. (currently amended)** A method according to Claim 11, wherein the step for forming the model of patients distal end of the femur further includes the steps of:  
compiling in a computer a CT image data of the patient's distal end of the femur;

Appl. No. 10/712,436  
Amdt. dated November 17, 2004  
Reply to Office action of October 19, 2004

Docket No. 58298-011501

creating a surface of the patients distal end of the femur; and  
driving a computer assisted machine system to machine the model of ~~10~~ patient's distal end of the femur.

**Claim 16. (withdrawn)** A method of installing a replacement device to the trochlear groove of a patient's femur, comprising the steps of:

providing a replacement device having a bottom side that substantially 15-matches the trochlear groove of a patient's femur, wherein the bottom side of the replacement device has a pin at a predetermined location;  
providing a marking template having a back side that substantially matches the trochlear groove of the patient's femur, wherein the marking template has an opening corresponding to the predetermined location of the pin;  
removing the cartilage from the distal end of the femur;  
positioning the marking template about the femur substantially similar to the desired installed position of the replacement device;  
drilling a hole on the distal end of the femur though the opening of the marking template;  
removing the marking template from the femur; and  
inserting the pin of the replacement device into the hole of the femur to install the replacement device on the desired location of the femur.

**Claim 17. (withdrawn)** A method according to Claim 16, wherein the replacement device has a plurality of pins, wherein the replacement device has a plurality of holes corresponding to the plurality of pins.

**Claim 18. (withdrawn)** A method according to Claim 17, further including the steps of:  
bonding the replacement device to the femur by applying adhesive between the two.

**Claim 19. (withdrawn)** A method according to Claim 17, further including the steps of  
bonding the replacement device to the femur by utilizing a bone ingrowth surface.